1. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$\frac{2}{3}, -7, \text{ and } \frac{7}{5}$$

A. $a \in [14, 16], b \in [74, 75], c \in [-204, -195],$ and $d \in [97, 102]$

B. $a \in [14, 16], b \in [74, 75], c \in [-204, -195],$ and $d \in [-98, -96]$

C. $a \in [14, 16], b \in [83, 101], c \in [-98, -83],$ and $d \in [-98, -96]$

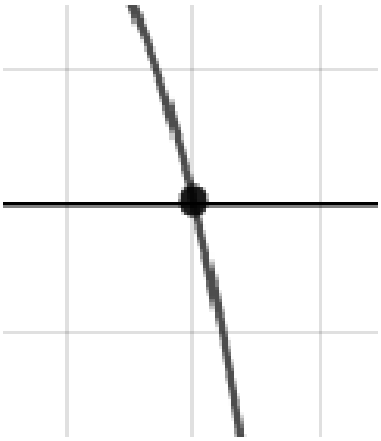
D. $a \in [14, 16], b \in [-81, -66], c \in [-204, -195],$ and $d \in [-98, -96]$

E. $a \in [14, 16], b \in [-116, -113], c \in [62, 71],$ and $d \in [97, 102]$

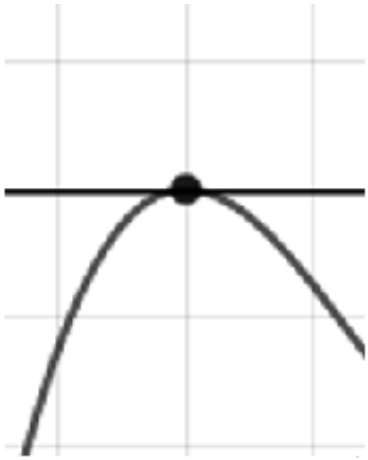
---

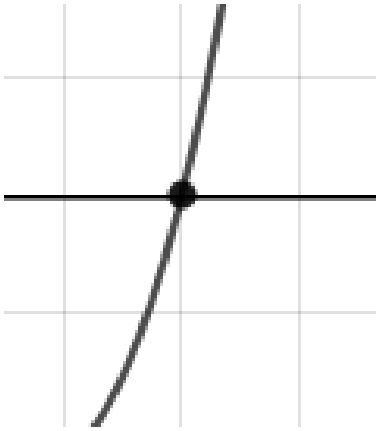
2. Describe the zero behavior of the zero $x = 8$ of the polynomial below.

$$f(x) = -4(x + 8)^7(x - 8)^{10}(x - 4)^4(x + 4)^8$$

A. 

C. 

B. 

D. 

E. None of the above.

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3. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$$-2 + 4i \text{ and } 4$$

A. $b \in [0.9, 2.6], c \in [-10, -4.4],$ and $d \in [15, 18]$

B. $b \in [-3.1, 0.1], c \in [2.6, 4.7],$ and $d \in [79, 82]$

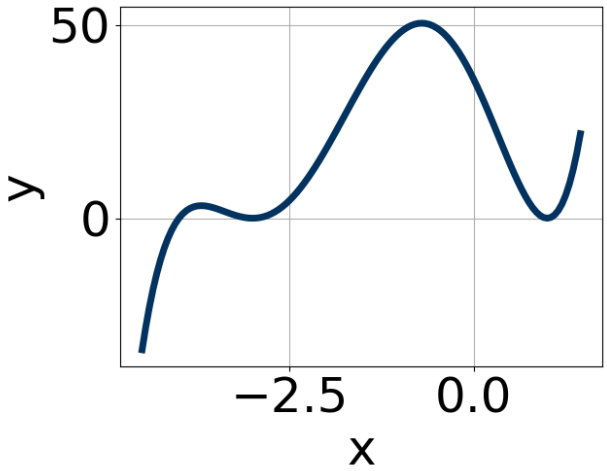
C. $b \in [0.9, 2.6], c \in [-6.7, 0.2],$ and $d \in [-12, -6]$

D. $b \in [-3.1, 0.1], c \in [2.6, 4.7],$ and $d \in [-82, -75]$

E. None of the above.

---

4. Which of the following equations *could* be of the graph presented below?



A. $3(x-1)^8(x+3)^7(x+4)^9$

B. $15(x-1)^4(x+3)^8(x+4)^5$

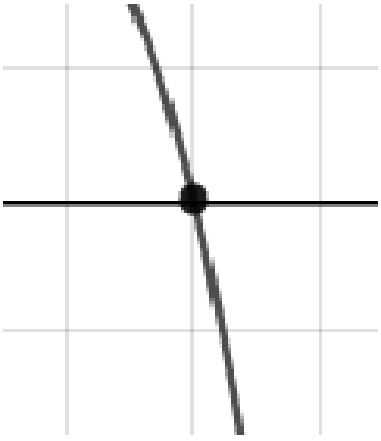
C. $13(x-1)^{10}(x+3)^7(x+4)^6$

D. $-5(x-1)^6(x+3)^4(x+4)^4$

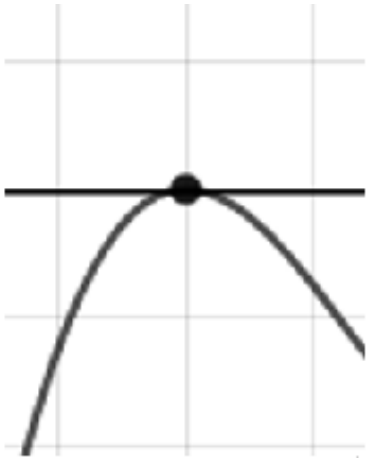
E. $-11(x-1)^{10}(x+3)^{10}(x+4)^7$

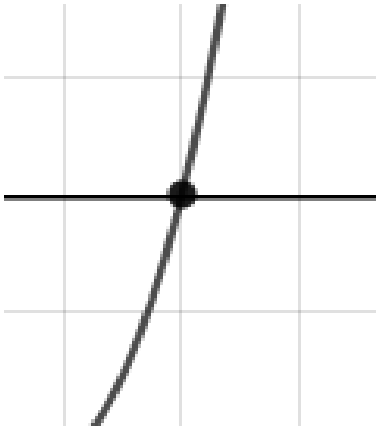
5. Describe the zero behavior of the zero $x = -5$ of the polynomial below.

$$f(x) = 6(x+8)^4(x-8)^2(x-5)^5(x+5)^2$$

A. 

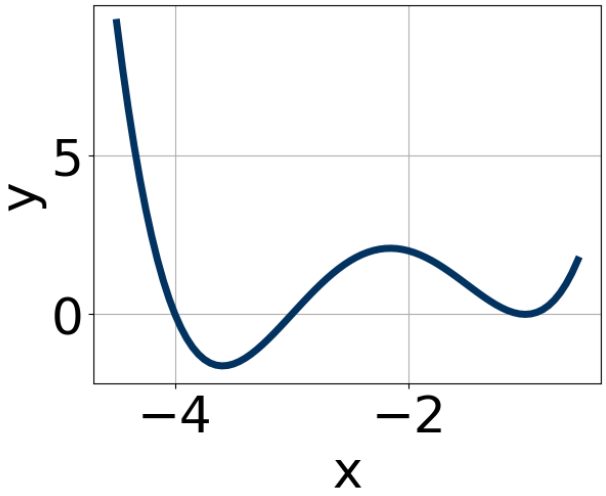
C. 

B. 

D. 

E. None of the above.

6. Which of the following equations *could* be of the graph presented below?



A. $-7(x+1)^6(x+3)^9(x+4)^7$

B. $3(x+1)^5(x+3)^4(x+4)^5$

C. $7(x+1)^8(x+3)^9(x+4)^{11}$

D. $-7(x+1)^4(x+3)^9(x+4)^{10}$

E. $17(x+1)^6(x+3)^8(x+4)^5$

---

7. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$$5 + 4i \text{ and } 2$$

A. $b \in [-20, -7], c \in [60, 64.2],$ and $d \in [-82.1, -78.6]$

B. $b \in [-4, 6], c \in [-9.6, -6.6],$ and $d \in [8.9, 14]$

C. $b \in [12, 16], c \in [60, 64.2],$ and $d \in [79, 82.4]$

D. $b \in [-4, 6], c \in [-6.7, -2.2],$ and $d \in [4.9, 9.8]$

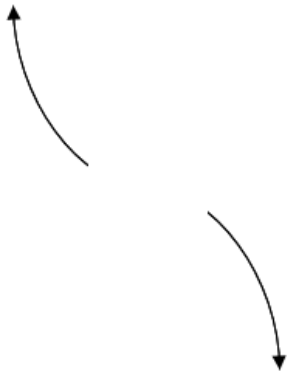
E. None of the above.

---

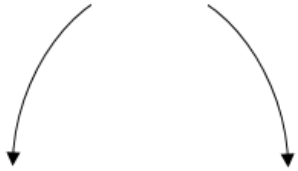
8. Describe the end behavior of the polynomial below.

$$f(x) = 7(x+8)^4(x-8)^7(x+3)^3(x-3)^3$$

A.

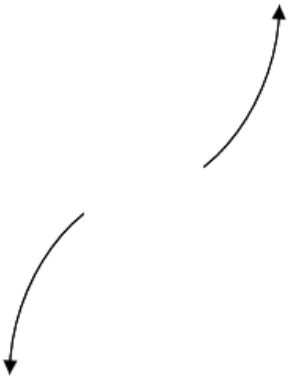


B.



C.

D.



E. None of the above.

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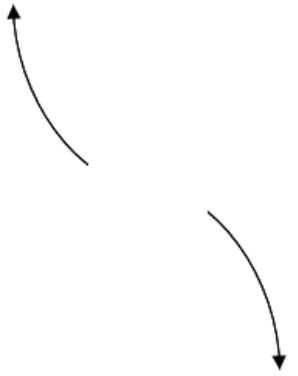
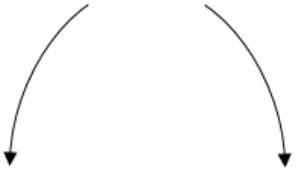
9. Describe the end behavior of the polynomial below.

$$f(x) = 5(x+5)^3(x-5)^8(x-7)^3(x+7)^3$$

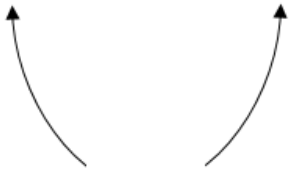
A.

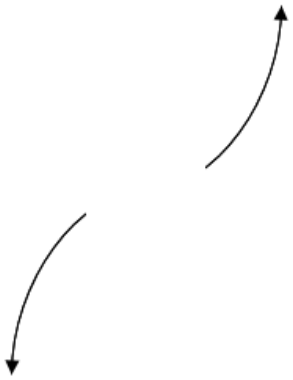


B.



C.



D. 

E. None of the above.

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10. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$\frac{-3}{2}, \frac{-4}{3}, \text{ and } \frac{-1}{4}$$

A. $a \in [21, 26], b \in [2, 9], c \in [-61, -45],$ and $d \in [-12, -9]$

B. $a \in [21, 26], b \in [69, 75], c \in [60, 68],$ and $d \in [9, 16]$

C. $a \in [21, 26], b \in [-68, -61], c \in [27, 37],$ and $d \in [9, 16]$

D. $a \in [21, 26], b \in [69, 75], c \in [60, 68],$ and $d \in [-12, -9]$

E. $a \in [21, 26], b \in [-77, -65], c \in [60, 68],$ and $d \in [-12, -9]$
